

ing and falls back upon the remainder. The same occurs in succussion of the chest.

3. The vibrations which yield metallic tinkling are transmitted from the liquid to the solid parietes, and thence directly to the ear, without any necessary agency of an echo, or reverberation of air in the cavity. This is shown particularly by the experiment of the bowl, page 48.

4. A minor, or *submetallic* tinkling, having no musical resonance, may be produced by slight impulses given to the air in the cavity, such as the breaking of bubbles of mucus at orifices above the surface of the liquid.

5. Amphoric resonance is produced by reverberations of the air in a vibrating cavity, without sonific impulse of the liquid. The same is true of metallic modifications of the voice, and of the cough when there is no tinkling. Metallic percussion seems also to depend upon the vibrations of air independently of liquid, and may be produced in some other cases when we strike upon a tense cavity in which a certain quantity of air is confined.

Boston, Sept. 1838.

ART. VI. *Surgical Clinic*. By N. R. SMITH, M.D., Professor of the Theory and Practice of Medicine, in Transylvania University.

CASE I. *Extirpation of the Parotid Gland*.—August 21, 1835, my friend, Dr. T. E. Bond, Sen., requested me to examine a tumor on the face of Miss Bryan, the daughter of Charles Bryan of Baltimore county. It was located between the left ear and the angle of the jaw, in the precise situation of the parotid gland. It presented an abrupt eminence, something in form like a pointing phlegmon—its base not broad. The tumour was hard, occasionally affected with lancinating pains, and tender to the touch. It very much disfigured the patient, and was stated to be increasing in a degree which caused much anxiety.

Both myself and Dr. Bond were inclined to regard the tumour as one which had originated in a lymphatic ganglion lying on the parotid, although we could not well define its base and extent in the direction of the zygomatic fossa. The history of the case in our view justified an operation for the removal of the part diseased, and I accordingly undertook it.

In the presence of several of my pupils, August 25, 1836, I commenced the operation by making a vertical incision from the zygoma to the angle of the jaw; and, deepening it, laid bare the external aspect of the tumour. On endeavouring to define its lateral limits with the knife, I soon discovered that I had to deal with the entire parotid, and proceeded accordingly. The disease affecting the organ had, in regard to consistence and form, distinguished itself from the surrounding parts. It was much more globular than the

healthy gland—had a more distinct envelop of cellular tissue—and had receded in a degree from its confined situation. Penetrating the posterior part of the tumour near its surface, I soon traced out the facial nerve (portio dura) and separated it from the tumour to a considerable extent. I then doubted whether to attempt to disengage the tumour from beneath the nerve, or to divide the latter. Anticipating great embarrassment in the execution of the first plan, and fearing that serious irritation would be necessarily inflicted upon the nerve, I at once divided it. Paralysis of the muscles of the face on that side instantly resulted.

I then cautiously proceeded with the dissection of the tumour. Penetrating between its diseased lobules on every side were occasional bands of cellular tissue. These I divided with great caution, as I expected to find some of them involving the branches of the external carotid, which emanate from the parotid. Thrusting the index of my left hand beneath the tumour, I made them successively turn over its extremity; and carefully feeling for pulsation, I effected their division, sometimes with the knife, but more generally with a very narrow probe-pointed bistoury. When I felt pulsation I endeavoured to effect the laceration of the band with the finger, or the handle of a scalpel. Thus I proceeded till I had insulated the tumour with the exception of a single band attaching the upper and posterior part of the diseased mass to the deep temporal region. Occasionally there had sprung a small artery, but not furnishing sufficient blood to embarrass the operation. I now divided the last band which attached the tumour, and a single artery sprung with considerable impetuosity. This I secured without difficulty with the tenaculum. Had I felt any considerable pulsation in it I should have included the whole band in a ligature before effecting its separation.

The tumour being now removed, I explored the cavity from which it had been taken. This extended quite to the styloid process; and the muscles arising from that point were seen with perfect distinctness. Not a vestige of any thing presenting the appearance of the parotid gland could be seen in the space usually occupied by it. Probably, however, that small process of the gland which extends forward on the cheek, termed *socia parotidis*, was left; but in the incision along the anterior border of the tumour I did not distinguish it or the duct of Steno. The tumour is in my possession, and is of the size of a very large hickory nut.

The patient bore the operation with much fortitude. The wound was dressed lightly with lint and bandage. Inflammation to some extent arose, and some embarrassment of deglutition and respiration resulted. A common cataplasm was applied; and, on the occurrence of suppuration the unpleasant symptoms abated. Cicatrization was effected in a few days, and all morbid sufferance ceased. The face, however, remained paralysed; and the eye suffered in some degree from the inability of the patient to close it. I saw this young lady some months after her recovery; and, at that time, the

cicatrix remained healthy, and the paralysis of the face had decidedly diminished.

The extirpation of the gland in this case I accomplished with much greater ease than I had expected. The small amount of hæmorrhage cannot fail to strike the reader with some surprise. It is to be accounted for, in my opinion, by presuming the obliteration of many of the vessels by the enlargement and morbid hardness of the gland; also by its displacement, in consequence of which traction was made on the vessels issuing from it.

This case furnishes facts which will aid to reconcile the opinions of anatomists and surgeons relative to the feasibility of the extirpation of this gland. The former, even at the present day, observing the extreme difficulty of dissecting the healthy gland, often declare its removal impossible. Surgeons, however, report numerous cases in which the operation has been unquestionably performed. I have seen the operation performed with success by Professor M'Clellan of Philadelphia; and in that case also the hæmorrhage was trifling, and from but a single vessel. The gland has also been removed by the late Professor Davidge of this city—by the late Professor N. Smith—by Professor Dudley, and, I believe, by several others in this country, as well as by numerous surgeons abroad.

The feasibility of the operation in these cases is, in my opinion, to be explained by the facts furnished in the above instance. The tumor in its growth had assumed a harder consistence than natural, without having imparted disease to the surrounding parts. It was therefore better defined than the healthy organ. It had also become spheroidal; and, from its size and hardness had necessarily receded from its confined situation. Its extirpation was therefore undoubtedly far easier than would be that of a healthy gland; and, because of the obliteration of the vessels from causes named above, attended with far less hæmorrhage.

CASE II. *Division of the Tendo Achillis for the cure of Club Foot.*—March 21, 1835, I was called to the infant child of the Reverend Mr. Hamner of this city. The little patient, then but three weeks of age, was born with the distortion of the left foot, termed "club-foot;" or in this instance with more propriety termed "*pes equina*," or "horse-foot." The inclination of the foot inward was very strong, and with difficulty resisted by the hand. When it was firmly seized and turned outwards, so as in some measure to assume its natural attitude, the tendo Achillis became exceedingly tense; and, in spite of every effort to prevent it, the foot would become extended on the leg by the resistance of the tendon, so that the instep was nearly in a line with the shin. It could be flexed, however, in a greater degree when the leg was flexed on the thigh, showing clearly that there existed nothing to hinder flexion but the resistance of the tendon.

The case had been previously seen by my friend Dr. M. Baer, who gave some judicious directions in regard to the mechanical management of the

case. On its coming into my hands I also resorted to the usual mechanism employed in such cases. I directed persevering efforts to be made with the hand to flex the foot and thus elongate the tendon, and also to abduct it. I even made a plaster cast of the limb, holding it as firmly as possible in a natural attitude; and, on the cast thus procured, shaped a splint, which was worn for a considerable time. I had about this time seen, in a number of Professor Gedding's Archives, an account of Stromeyer's operation of dividing the tendo Achillis, and suggested the operation to the parents; but as the expedient was new, and had never then been performed in this country, it was determined not to resort to it till other means failed.

Those means, however, did fail, and I declared for the operation. The father being a gentleman of superior intelligence and decision, I made him fully acquainted with my views. On carefully examining the member he became satisfied that the resistance to flexion and permanent abduction of the foot was wholly on the part of the tendon, and promptly acquiesced in the proposition.

I performed the operation, August 3, 1835, in a method I believe somewhat different from the mode usually adopted. The leg being firmly held, the foot was strongly abducted and flexed so as to render the tendon very tense. I then, with my finger and thumb of the left hand, rendered the integuments tense over the tendon, and with a scalpel divided them down to the tendon, and to the extent of an inch. One stroke of the knife completely exposed the silvery surface of the tendon; and then, drawing the integuments firmly to each side, I easily insinuated a small director beneath it, and with the greatest care carried it through. Placing the point of the knife in the groove of the director, the edge presenting upward, I caused it to glide along the groove, and divided the tendon at one stroke. Its extremities sprung apart like those of a divided bowstring, and the foot, instantly yielding to the force which was being exercised upon it, became flexed at once. Nor did it require now the least force to maintain the abduction.

I now immediately closed the wound with adhesive strips and a roller, using no other support whatever, not doubting that continuity would be established notwithstanding some motion, though Stromeyer and others have deemed it necessary to use a splint or boot.

I dressed the wound on the fourth day, and found that union had taken place by the first intention. The child scarcely suffered a moment's pain after the operation—not even during the dressings; and the parts were soon restored to a state of soundness. I now found that the tendons which antagonised the tendo Achillis were rapidly restoring the rectitude of the foot. I therefore left the case entirely to the natural action of the muscles. When the child began to walk, which she did at the usual period, I had the satisfaction to see her tread fairly and firmly on the sole, there being no appearance of deformity except that the foot was a little shorter than the other, and that there was a little inclination of the toe inward. To correct this last,

I subsequently caused the patient to wear a spring boot. The following note, which I have this day received from my friend Mr. Hamner, will show the present condition of the foot.

DR. N. R. SMITH. My dear sir—In reply to your note relative to the operation on my little daughter three years since, it affords me great pleasure to state that the benefit derived from the operation is complete. She walks without the slightest appearance of a limp, and seems to have equal strength and agility in the limb on which the operation was performed as in the other. The only indication which appears, of any thing like malposition having afflicted her, is a very slight inclination of the toes inward, which, however, does not inconvenience her at all.

Yours, with a deep sense of indebtedness to your skill and kindness,

JAMES G. HAMNER.

Baltimore, September 12th, 1838.

I have thus long delayed reporting the above case in order that its result might be fully determined. I have since operated in another case which is doing well, and which I shall report at a future period.

CASE III. *Paracentesis Vesicæ for relief of suppression caused by rupture of the Urethra.* November 27, 1837, I was requested by my friend, Dr. M. Baer, to see the child of Mrs. Hardy, of Pratt street, a lad of 7 years. He had that day fallen astride upon the margin of an open barrel, and had received a severe contusion in the perinæum by the sharp margin of the staves. The injury was directly beneath the arch of the pubis, and, consequently, upon that part of the urethra where the membranous portion penetrates the bulb. The skin had suffered no wound, but the extravasation and hard tumefaction which had promptly resulted, gave evidence that parts beneath the integuments had been divided. A more distressing and conclusive proof of this had occurred soon after the injury;—complete suppression of urine had resulted, though the desire to void it was urgent, and the efforts frequently repeated. Dr. Baer first saw the case, not long after the occurrence of the accident, and attempted to pass the catheter. The nature of the injury, however, had rendered his efforts unavailing. On my being called, I also attempted the introduction of a catheter; but, although I used instruments varying in size and form, and practised gently every variety of manipulation which promised success, I failed to reach the bladder. Blood flowed from the instrument whenever it reached the part, and its point appeared then to be engaged in a lacerated wound. The condition of things was plain enough;—the urethra had been divided—blood had accumulated in the wound, and this had been followed by urine, which, being injected with some force into the parts, had been imbibed by the cellular tissue.

As but a few hours had elapsed from the time of the injury, and as the bladder was not suffering a severe degree of distension, we resolved to delay further manual interference, and resort to measures calculated to obviate

irritation and inflammation. Venesection was performed, an aperient and warm fomentation directed, and, at night, an anodyne.

We saw the patient next morning, and rather unexpectedly found him partially relieved. Urine had been, from time to time, voided in small quantities and slowly; the bladder was rather less distended than the evening before, and the febrile excitement was not excessive. We, therefore, still delayed, after having made another ineffectual attempt to pass the catheter.

The next day, 29th, owing to indisposition, I did not see the patient, and the morning following Dr. Baer called to inform me that the suppression had become complete, and that the symptoms had assumed so urgent a character as to demand immediate manual interference. I visited him immediately, but Dr. B. being occupied with an important engagement, could not accompany me. I found the patient in a most perilous and distressing extremity. The tumid bladder was distinctly felt above the pubes, and was hard; there existed high febrile excitement and extreme restlessness, and, at intervals of fifteen or twenty minutes, violent spasms of the bladder and abdominal muscles occurred, during which there was an agony of suffering. On introducing the finger into the rectum, I distinctly felt the base of the bladder pressing firmly upon that intestine and downward upon the perinæum. The case had now manifestly reached a point which brooked no further delay, and I again unsuccessfully attempted the passage of a catheter.

There was now no alternative but an operation; but I hesitated for a moment whether to cut open the lacerated urethra, search for the wound in that duct, and thus introduce the catheter, or to perform the operation of tapping the bladder without regard to the injured urethra. Had there been any considerable tumor in the perinæum and scrotum, indicating the lodgement there of blood and urine in quantity, and that giving rise to high inflammation, I should have incised the part immediately. But the tumor was circumscribed and small, nor was any fluctuation to be discovered; no circumstance, indeed, which demanded an incision but the suppression of urine, and this was in part occasioned by the irritation of the retaining muscles. The facility with which I felt the tumor of the bladder from the rectum pressing into the perinæum, and the small depth of parts in that region in a boy of that age, suggested the tapping of the bladder through that part, a method which in all cases is preferred by some eminent surgeons. The operation of cutting for the urethra would have been a much more difficult process, and would have required assistance which I could not at that moment command. I was so apprehensive of mischief from further delay that I resolved to proceed at once, with no other aid but that of the mother.

I placed the patient on his back upon the margin of the bed; his mother, a woman of resolution, held him firmly; I introduced the left index into the rectum, and, seizing a small, straight bistoury, I pierced the integuments at the centre of the line in which the incision is made in lithotomy. I then,

giving the instrument a general guidance with the finger in the rectum, struck for the angular space between the crus penis and bulb of the urethra, and conveying the bistoury along the left side of the membranous portion of the urethra, endeavored to strike the bladder just exterior to the prostate gland. I then withdrew the bistoury and immediately conveyed along the wound a small gum-elastic catheter into the bladder. There instantly occurred a free gush of urine from the catheter, and it continued to flow till the tumor of the bladder subsided. The sufferings of the patient immediately ceased. Having ascertained that the instrument was so firmly embraced in the wound as that there was no danger of its escape, I left him for the night.

The next morning Dr. Baer saw him with me. We found him comparatively comfortable—urine flowed freely by the catheter—the local irritation and constitutional symptoms much abated—in all respects indeed doing well.

The next day, December 1st, his condition was the same;—also on the following day. December 3d, the local swelling and tenderness having much abated, I again gently attempted the passage of a silver catheter, and fortunately succeeded. I presume that, during the perfect repose which the injured urethra enjoyed during the presence of the catheter in the wound, absorption of the effused fluids had taken place, and the continuity of the parts had been partially restored. I now withdrew the catheter from the wound, and secured with tapes that which I had introduced along the urethra.

During the following night the patient was exceedingly restless; rendered so partly, perhaps, by the presence of the silver catheter in the bladder. Toward morning, though carefully watched, he seized the instrument and disengaged it from the bladder. After the lapse of a little time he made an ineffectual effort to pass water, and immediately all the unpleasant symptoms of suppression returned. He suffered the most urgent desire to void urine, together with spasmodic throes, for three or four hours, when suddenly the flow by the urethra was restored. I did not see him till morning, not having been informed of his condition, but I then found him entirely relieved. He continued from this time to void his urine with but little impediment. The wound in the perinæum healed promptly, and in a few days the patient was restored to health.

Appended to a case of "Laceration of the Urethra," published in No. XXXVIII of this Journal, are several interesting cases of laceration of the urethra, adduced by the editor from various sources, for the purpose of illustrating the treatment of such injuries. In those instances incisions were with great propriety made into the injured parts, the operator having a double object in view—the evacuation of extravasated fluids, and the relief of suppression. But the circumstances in the case which I have related were somewhat different, and, in my opinion, justify a different mode of practice. The editor justly remarks in the article alluded to, that the operation of incising the injured parts, "is far preferable to the puncture of the bladder either

above the pubis or from the rectum." But is it preferable in a child, and in a case unaccompanied with much effusion, to the puncture of the bladder through the perinæum? The parts to be traversed by the knife are not voluminous in a boy, nor are they so vascular and sensitive as in the adult; the instrument is easily guided by the finger in the rectum; and the bladder, when thus distended, is so fair an object, and so distinctly felt, that one acquainted with the anatomy of the parts can scarcely fail to attain it without inflicting injury upon the surrounding parts. Under ordinary circumstances, however, instead of transfixing all the parts at once, after the method of Fourbert, I should first make an external incision as for lithotomy, and complete the operation with the trochar, as the process is modified by Sabatier.

The objections which Velpeau makes to this operation on the adult, viz., that sometimes the ureter or seminal vesicle may be hurt—sometimes the instrument miss the bladder and penetrate forward between it and the pubes, or posteriorly into the cul-de-sac of the peritoneum, certainly do not obtain with equal force in operating on boys. The volume of the parts to be traversed is relatively far less, and the prostate and seminal vesicle are relatively less developed. I cheerfully admit, however, that in many cases of even young subjects, the operation of cutting for and piercing the urethra anterior to the prostate, the operation which Velpeau and Sir A. Cooper would substitute whenever practicable, will often be preferable to that of tapping. But in all cases in which the puncture of the bladder becomes necessary in young subjects, I should decidedly prefer the puncture through the perinæum to that above the pubes, or that from the rectum.

CASE IV. Amputation of the Thigh during Progressive Gangrene, resulting from Fracture and the Pressure of a Displaced Fragment of the Femur on the great artery and vein.—August 31, 1837. I was called by an intelligent medical friend to see, with him and another medical attendant, in Pratt street near Hanover, a case of recent fracture of the thigh, in which gangrene of the leg had supervened. The patient was a youth 17 years of age, of good constitution, but probably, at the time of the injury, somewhat under the influence of malaria, as he came from a sickly district on the eastern shore of Maryland. Being on board a bay craft he suffered a fracture of the leg near the knee, by the fall of a bag of merchandize which was being removed from the vessel.

I saw him on the fifth day from that of the injury. The limb was then reposing on pillows, in the semiflexed position, not having been placed in splints. The whole foot and leg, to within three inches of the knee, were in a state of complete mortification, the parts being tumid, crepitous when pressed, covered with dark vesications, cold and completely insensible. A belt of gangrenous inflammation existed below the knee; but nothing like a line of demarkation existed between the dead and living parts. There was considerable tumefaction at the place of fracture; but the action above the knee was neither excessive nor unhealthy. His pulse was firm and good,

(about 100), the nervous system but little disturbed, and the stomach performing its offices as well as in ordinary cases of fracture.

Taking into consideration the condition of the limb above the knee, and the favourable state of the system, we came to the conclusion that the mortification must have resulted from some local cause; probably some lesion inflicted upon the great vessels and nerve, and although gangrene was still progressing, we unanimously resolved that amputation, immediately above the fracture, should be performed. I amputated the limb within two hours after I first saw him, and the operation was endured by the patient with fortitude, and with but little prostration. The stump was carefully closed in a manner to favour union by the first intention. Further history of the case is unnecessary, except to say that healthy action was instituted in the stump, and the patient had a rapid recovery.

But that which was chiefly interesting in the case, was the condition of the parts at the place of fracture, ascertained by dissection. The member having been disturbed as little as possible, I made a vertical incision above the patella, down upon the bone, and quickly discovered that the fracture was within about two inches and a quarter of the extremity of the bone, and that it was perfectly transverse. It was also seen, that the upper fragment was thrust into the ham, and that it was lodged directly behind the lower fragment, overlapping it about three-fourths of an inch.

Reversing the member, we carefully exposed the soft parts in the popliteal region. Here the source of mischief was speedily revealed. In the midst of effused blood and serum were found the femoral artery and vein thrust backward, and tensely drawn across the sharp posterior margin of the superior fragment, in such a manner that it was perfectly obvious that the circulation in both vessels must have been completely interrupted. It will be remembered, that the bone at this place is large, as it is there expanding to form the condyles. The posterior surface is broad and flat, and consequently the margin, over which the vessels were drawn, was long and straight. The accompanying sketch will illustrate the relations of the parts. The preparation I have preserved.



There are surgeons of eminence who still advocate the practice of delaying to reduce fractures till local irritation has abated. Such was the practice inculcated by the late Professor of Anatomy in the University of Maryland, but the facts furnished by the above case, will strongly gainsay such a precept.

Baltimore, Sept. 1838.